

(12) UK Patent Application (19) GB (11) 2 273 955 (13) A

(43) Date of A Publication 06.07.1994

(21) Application No 9325521.4

(22) Date of Filing 14.12.1993

(30) Priority Data

(31) 9226006

(32) 14.12.1992

(33) GB

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(51) INT CL⁵

E05D 1/06

(52) UK CL (Edition M)

E2F FCP

U1S S2286

(56) Documents Cited

GB 2263936 A

GB 2241020 A

GB 2132682 A

GB 2076884 A

GB 0931666 A

GB 0862027 A

(58) Field of Search

UK CL (Edition M) E2F FCP

INT CL⁵ E05D

REF. 3 DOCKET Pu040078

CORRES. COUNTRY:

COUNTRY: PCT

(54) Hinge assembly

(57) A hinge assembly particularly for doors and outdoor poster displays comprises a member 12 having an arcuate protrusion 16 which engages in a matching arcuate channel 11 formed in a member 10. When the assembly is used in an outdoor poster display with the hinge axis horizontally oriented, a channel 22 forming part of the protrusion 16 collects rainwater to prevent it wetting the enclosed poster.

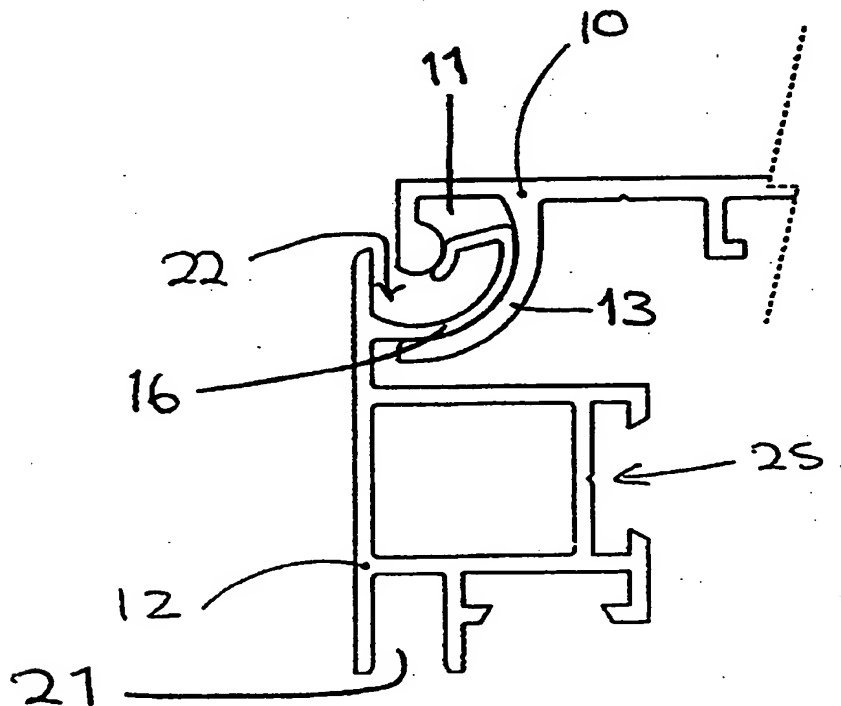


Fig 3

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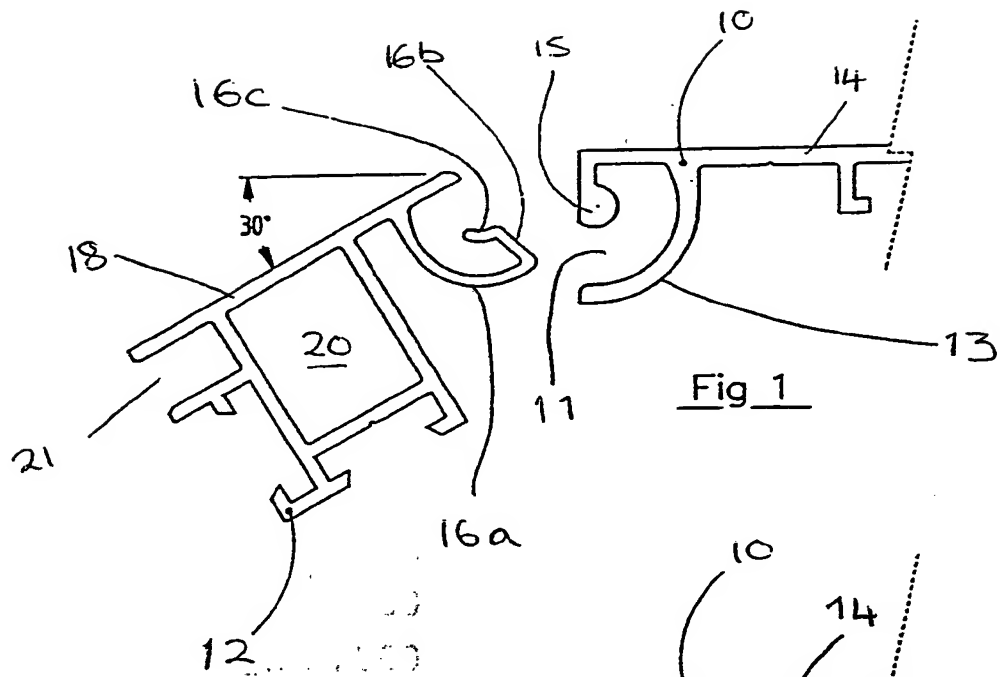


Fig 1

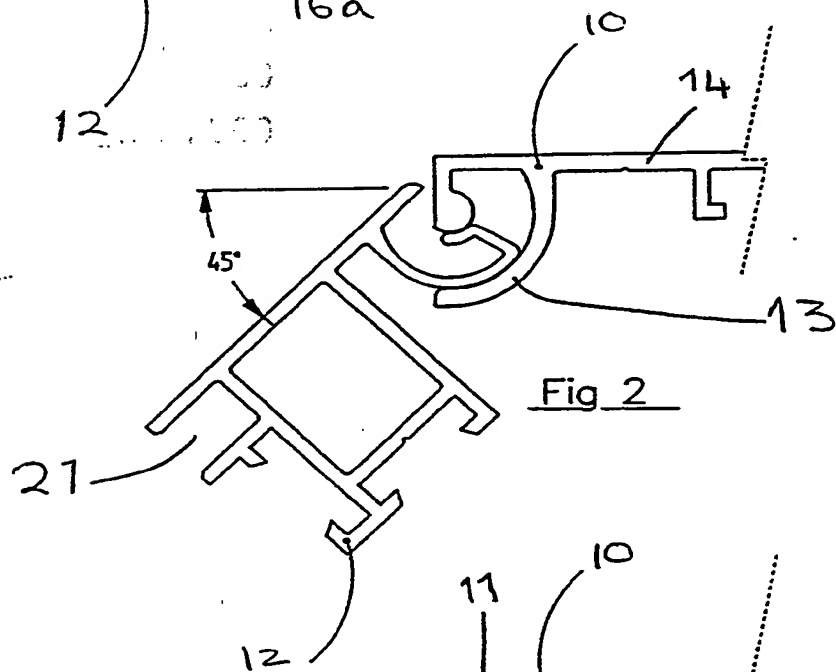


Fig 2

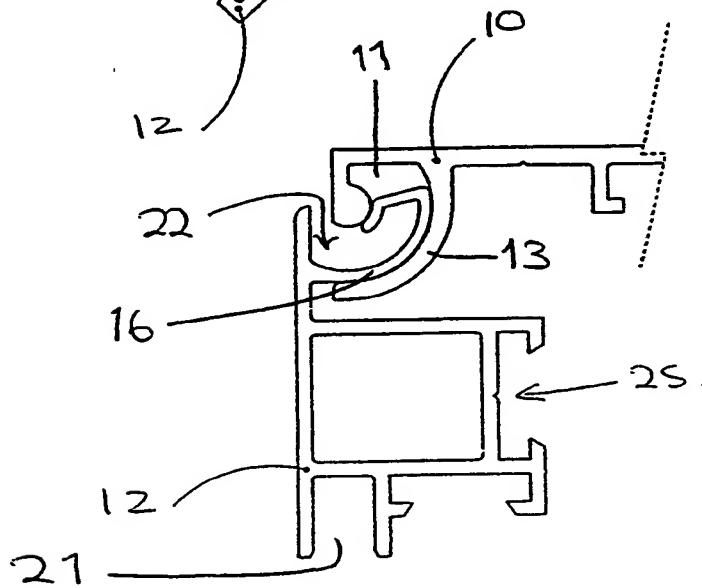


Fig 3

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HINGE ASSEMBLY

The present invention relates to a hinge assembly. Many types of hinge assemblies have been proposed hitherto. Most of these are complicated to assemble and dismantle. Possibly the simplest are those which may be dismantled by sliding in the axial direction of the hinge. Such an arrangement is not suitable for all applications.

The present invention provides a hinge assembly which may be dismantled by simply lifting one hinge member with respect to the other in a direction perpendicular to the hinge axis. The preferred hinge assembly according to the invention comprises first and second members, the first having an arcuate channel for receiving an arcuate protrusion formed on the second portion. Thus, as long as the arcuate protrusion is retained in the arcuate channel, the two members may be rotated with respect to each other about the centre of the arc. The two members may be readily disengaged by lifting the protrusion right out of the arcuate channel or groove.

Preferably the two members are extruded so that they are prism shaped. Thus, in the case of a door and its support, for example, the two members may extend along the whole length of the edge of the door.

The hinge assembly is particularly suitable for horizontal orientation, at the top edge of a door, for example, which has to be lifted for opening. With the second member being attached to the door and the first member attached to the support, gravity and the weight of the door will ensure that the hinge assembly does not come apart accidentally. The two portions of the hinge assembly may be integrally formed with a door and its support respectively.

Thus, the invention also provides an assembly comprising a door or similar closure and a support to which it may be hingedly mounted, including a hinge assembly as described above.

In a particularly advantageous embodiment of the invention, the arcuate protrusion is substantially hollow. Thus, in an arrangement of the type described in the preceding paragraph it provides a gutter for rainwater, protecting whatever is on the inside of the door.

The invention is particularly suitable for a poster display of the type comprising a housing for the poster having a transparent protective door.

An embodiment of the invention will now be described by way of example only and with reference to the accompanying drawings in which:

FIGURE 1 is a cross sectional view of the two portions of a hinge assembly according to the invention disengaged;

FIGURE 2 shows the two portions of Figure 1 at the point of initial engagement; and

FIGURE 3 shows the two portions of Figures 1 and 2 fully engaged.

The illustrated hinge assembly comprises a first member in the form of a female portion 10 which presents an arcuate channel 11 for reception of a second member in the form of a male portion 12 to be described in more detail below. The channel 11 is defined between an arcuate

protrusion 13 extending from a planar section 14 and a protrusion 15 extending from an edge of the planar section 14 having a part cylindrical surface facing the protrusion 13 and concentric with the protrusion 13. The protrusions 13 and 15 define a channel 11 with a relatively small radius of curvature centred in the protrusion 15 extending by about one third of a circle, and ending at the planar section 14.

The male portion 12 has a generally arcuate protrusion 16 dimensioned to fit closely into the channel 11 in the female portion 10. The protrusion 16 is hollow and comprises a first arcuate portion 16a whose outer surface is shaped to match the inner surface of the protrusion 13, a flat portion 16b and a second arcuate portion 16c whose outer surface is shaped to match the inner surface of the protrusion 15. The first arcuate portion 16a extends from a planar section 18.

The particular illustrated hinge assembly according to the invention is designed for use in a poster display unit of the type comprising a main housing or carcass and having a transparent door through which the poster may be viewed. The hinge is intended to extend horizontally in use. Thus, the extruded female portion 10 is integrally formed with or attached to the upper horizontal member of the housing or carcass and the extruded male portion is integrally formed with the upper horizontal part of a frame for the glass or other transparent sheet material. Thus, in this preferred embodiment the male portion 12 further includes a rigid box section 20 and a channel 21 for receiving the transparent sheet material.

In this arrangement, the hinge assembly is operated as follows:

The door frame (Figure 1) item 12 is offered at an oblique angle (greater than 45 degrees) to the door jamb or main carcass item 10. Once initial engagement (Figure 2) has been achieved between item 12 and item 10 and the

protrusion of the hinge 16 is primarily engaged with the groove of item 10, the door frame in Figure 2 is then allowed to close to the vertical (Figure 3), thus fully engaging the hinge detail within the groove of item 10. It is common that the door jamb or main carcase item B remains stationary whilst the door frame in Figure 2 is the moving section. The two components (items 10 and 12) can be later released by the reverse process thus described.

The hinge assembly is particularly suitable for outdoor use because the hollow protrusion 16 is open towards the centre of the arc and thus provides a gutter 22 (Figure 3) to divert and prevent the ingress of rainwater.

The male and female portions 10 and 12 may both be manufactured from extruded aluminium but many other extrusion materials and processes may be used such as extruded GRP (protrusion), extruded PVC or any other process of this kind.

The shape of the male portion with the protrusion 16 omitted may be used to form the remainder of the door frame for the poster display unit. A seal may be located in a channel 25 extending from the box section 20.

It will be appreciated that the hinge assembly just described has the following advantages:

- a) ability to lift off from the main carcase or door jamb after opening greater than 45 degrees;
- b) continuous weather-proofing with gutter detail to shed rainwater to extreme ends of the door;
- c) no secondary fixing of hinge or receiver to door or door jamb;
- d) minimisation of wear between component parts caused by the collection of dirt or atmospheric pollution; and
- e) the ability to extrude the continuous aluminium section using conventional tooling.

CLAIMS:

1. A hinge assembly comprising first and second members, the first member including a channel of arcuate cross section and the second member having a protrusion of arcuate cross section which is insertable in the channel of the first member.
2. A hinge assembly as claimed in claim 1 in which the first and second members have the shape of prisms.
3. A hinge assembly as claimed in claim 1 or 2 in which the protrusion of the second member is hollow and has an opening facing the centre of the arc.
4. A hinge assembly as claimed in claim 1,2 or 3 in which the channel and protrusion each describe approximately one third of a circle.
5. A hinge assembly as claimed in claim 1,2 or 3 in which the channel and protrusion are dimensioned such that one member may be rotated with respect to the other about the centre of the arc through at least 45 degrees without the protrusion becoming disengaged from the channel.
6. A hinge assembly as claimed in any preceding claim in which the first member includes an arcuate protrusion extending from an edge of a planar portion and a protrusion extending from an edge of the planar section having a part cylindrical surface which is concentric with the arcuate protrusion.
7. A hinge assembly as claimed in claim 6 in which the second member has protrusions shaped to match the arcuate protrusion and cylindrical surface of the first member, joined by a planar portion.

8. A hinge assembly as claimed in any preceding claim in which one of the members additionally includes a channel for receiving the edge of a sheet of material.

9. A support and closure assembly comprising a closure pivotably mounted on the support by means of a hinge assembly as claimed in any preceding claim.

10. A support and closure assembly as claimed in claim 9 in which the first and second members are integral parts of the support and closure respectively.

12. A support and closure assembly as claimed in any preceding claim in which the closure has the form of a frame.

13. A poster display comprising a support and closure assembly as claimed in claim 12, in which the closure frames a sheet of transparent material and the support comprises a housing for the poster.

14. A hinge assembly substantially as herein before described with reference to the accompanying drawings.

15. A support and closure assembly substantially as hereinbefore described with reference to the accompanying drawings.

16. A poster display substantially as hereinbefore described with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(the Search report)

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Application number
GB 9325521.4

Relevant Technical Fields

(i) UK Cl (Ed.M) E2F (FCP)

(ii) Int Cl (Ed.5) E05D

Search Examiner
K MACDONALD

Date of completion of Search
22 MARCH 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

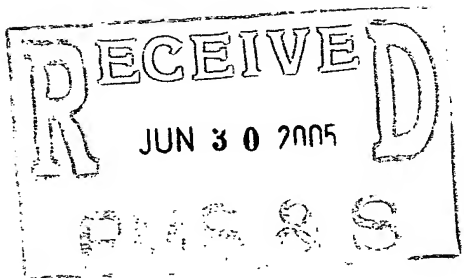
Documents considered relevant following a search in respect of Claims :-
1-16

Categories of documents

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| <p>X: Document indicating lack of novelty or of inventive step.</p> <p>Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p>A: Document indicating technological background and/or state of the art.</p> | <p>P: Document published on or after the declared priority date but before the filing date of the present application.</p> <p>E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p>&: Member of the same patent family; corresponding document.</p> |
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Category	Identity of document and relevant passages		Relevant to claim(s)
P X	GB 2263936 A	(TRIMETALS) 11 August 1993 Figures 1, 4	at least Claim 1
X	GB 2241020 A	(SOCIETE EUROPEENE ETC) Figures 1, 2	at least Claim 1
X	GB 2132682 A	(BRITISH ALUMINIUM) Figure 1	at least Claim 1
X	GB 2076884 A	(CUTHBERT) Figures 1-3	at least Claim 1
X	GB 0931666	(BRITISH ALUMINIUM) Figures 2, 3	at least Claim 1
X	GB 0862027	(MORLEY) Figure 2	at least Claim 1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).



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